

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

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In re Application of: : Examiner: M. Armand
: :
Klaus BREITSCHWERDT et al. : :
: :
For: ELECTRICAL COMPONENT, IN : :
PARTICULAR HIGH-FREQUENCY : :
MICROELECTRONIC OR : :
MICROELECTROMECHANICAL : :
COMPONENT, AND METHOD FOR : :
MANUFACTURING THE SAME : :
: : Art Unit: 2814
Filed: August 16, 2005 : :
: :
Serial No.: 10/520,218 : :
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Alexandria, VA 22313-1450

APPEAL BRIEF PURSUANT TO 37 C.F.R. § 41.37

SIR:

On November 6, 2009, Appellants submitted a Notice of Appeal from the last decision of the Examiner contained in the Final Office Action dated May 22, 2009 in the above-identified patent application.

In accordance with 37 C.F.R. § 41.37, this brief is submitted in support of the appeal of the rejections of claims 22 to 45 and 51. For at least the reasons set forth below, the final rejections of claims 22 to 45 and 51 should be reversed.

1. REAL PARTY IN INTEREST

The real party in interest in the present appeal is ROBERT BOSCH GMBH of Stuttgart in the Federal Republic of Germany, which is the assignee of the entire right, title and interest in and to the present application.

2. RELATED APPEALS AND INTERFERENCES

There are no other prior or pending appeals, interferences or judicial proceedings known by the undersigned, or believed by the undersigned to be known to Appellants or the assignee, ROBERT BOSCH GMBH, “which may be related to, directly affect or be directly affected by or have a bearing on the Board’s decision in the pending appeal.”

3. STATUS OF CLAIMS

Claims 1 to 22 and 46 to 50 have been canceled.

Claims 23 to 45 and 51 to 53 are pending.

Claims 52 and 53 have been withdrawn from consideration.

Claims 22 to 30, 39, 43, 44, and 51 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of U.S. Patent No. 6,198,168 (“Geusic et al.”), U.S. Patent No. 6,207,903 (“Wen et al.”), and U.S. Patent Application Publication No. 2003/0072130 (“Tsang et al.”).

Claims 32 and 33 to 36 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination Geusic et al., Wen et al., Tsang et al., and U.S. Patent No. 5,926,377 (“Nakao et al.”).

Claims 37 and 38 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Geusic et al., Wen et al., Tsang et al., Nakao et al., and U.S. Patent No. 5,312,765 (“Kanber”).

Claim 45 stands rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Geusic et al., Wen et al., Tsang et al., and U.S. Patent No. 5,901,050 (“Imai”).

Claims 29, 30, 40, and 41 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Geusic et al., Wen et al., Tsang et al., and U.S. Patent No. 6,328,342 (“Belousov et al.”).

A copy of the appealed claims, *i.e.*, claims 23 to 45 and 51, is attached hereto in the Claims Appendix.

4. STATUS OF AMENDMENTS

In response to the Final Office Action dated May 22, 2009, Appellants submitted a “Reply Under 37 C.F.R. § 1.116” on September 2, 2009. The Reply Under 37 C.F.R. § 1.116 did not include any proposed amendments to the claims. It is noted, however, that the Advisory Action dated October 5, 2009 indicates that “[f]or purposes of appeal, the

proposed amendment(s) . . . will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended,” despite the fact that no proposed amendments to the claims were included in the Reply Under 37 C.F.R. § 1.116. It is Appellants’ understanding that the claims as included in the annexed “Claims Appendix” reflect the current claims.

5. SUMMARY OF CLAIMED SUBJECT MATTER

Independent claim 22 relates to an electrical component. *Specification* at page 7, lines 8 to 12. Claim 22 recites that the electrical component includes a first conductive structure 11. *Specification* at page 7, lines 12 to 14. Claim 22 recites that the electrical component includes a second conductive structure 12. *Specification* at page 7, lines 12 to 14. Claim 22 recites that the electrical component includes at least one feedthrough 13 including one of a right prism and a right oval cylinder. *Specification* at page 4, lines 30 to 33 and page 7, lines 19 to 21. Claim 22 recites that the electrical component includes a base element 10 provided with at least one feedthrough 13 that connects, continuously at least for high frequency electromagnetic waves, the first conductive structure 11, the first conductive structure 11 extending on or in a vicinity of an upper side 21 of the base element 10, to the second conductive structure 12, the second conductive structure 12 extending on or in a vicinity of a lower side 20 of the base element 10. *Specification* at page 7, lines 8 to 12 and 15 to 19. Claim 22 recites that each one of the first conductive structure 11 and the second conductive structure 12 includes a planar waveguide 11, 11’, 11”, 12, 12’, 12”. *Specification* at page 7, line 26 to page 8, line 5.

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

- A. Whether claims 22 to 30, 39, 43, 44, and 51 are patentable under 35 U.S.C. § 103(a) over the combination of Geusic et al., Wen et al. and Tsang et al.
- B. Whether claims 32 and 33 to 36 are patentable under 35 U.S.C. § 103(a) over the combination of Geusic et al., Wen et al., Tsang et al., and Nakao et al.
- C. Whether claims 37 and 38 are patentable under 35 U.S.C. § 103(a) over the combination of Geusic et al., Wen et al., Tsang et al., Nakao et al., and Kanber.
- D. Whether claim 45 stands is patentable under 35 U.S.C. § 103(a) over the combination of Geusic et al., Wen et al., Tsang et al., and Imai.

E. Whether claims 29, 30, 40, and 41 are patentable under 35 U.S.C. § 103(a) over the combination of Geusic et al., Wen et al., Tsang et al., and Belousov et al.

7. **ARGUMENTS**

A. **Rejection of Claims 22 to 30, 39, 43, 44, and 51 Under 35 U.S.C. § 103(a)**

Claims 22 to 30, 39, 43, 44, and 51 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Geusic et al., Wen et al., and Tsang et al. It is respectfully submitted that the present rejection should be reversed for at least the following reasons.

Claim 22, which relates to an electrical component, recites, *inter alia*, that at least one feedthrough that includes one of a right prism and a right oval cylinder. Regarding this feature, the Final Office Action contends at page 5 that Tsang et al. discloses an oval cylinder. In particular, the Final Office Action asserts that via 12 of Figure 6 is an oval cylinder, and further points to the disclosure of the cylinder being disclosed as having a diameter. However, there is absolutely no disclosure in Tsang et al. of a right oval cylinder. Rather, the cylinder disclosed by Tsang et al. has a circular cross-section. Figure 6, which is an orthographic illustration, appears consistent with a cylinder having a circular cross-section, rather than an oval cross-section. Further, the detailed description of Tsang et al. describes the shape of the vias in terms of a single inner diameter and a single outer diameter. *See* para. [0044]. Thus, it is plainly apparent that the cylindrical geometry of the vias is circular rather than oval. Indeed, Tsang et al. does not disclose, or even suggest, a feedthrough that includes at least one of a right prism and a right oval cylinder.

As set forth above, Tsang et al. does not disclose, or even suggest, at least one feedthrough that includes one of a right prism and a right oval cylinder, as recited in claim 22. Geusic et al. and Wen et al. also do not disclose, or even suggest, this feature. As such, it is plainly apparent that the combination of Geusic et al., Wen et al., and Tsang et al. does not disclose, or even suggest, all of the features of claim 22. Accordingly, it is plainly apparent that the combination of Geusic et al., Wen et al., and Tsang et al. fails to render unpatentable claim 22. That is, the Final Office Action and/or the Advisory Action do not establish a *prima facie* case of obviousness consistent with the Supreme Court's decision in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007).

Claims 23 to 30, 39, 43, 44, and 51 ultimately depend from claim 22. As such, it is respectfully submitted that the combination of Geusic et al., Wen et al., and Tsang et al.

does not render unpatentable any of claims 23 to 30, 39, 43, 44, and 51. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988) (any dependent claim that depends from a non-obvious independent claim is non-obvious).

Further, the present rejection is deficient for at least the following additional reasons.

Appellants traverse the assertion at page 5 of the Final Office Action that providing an oval cylinder would be “an obvious matter of design choice.” In this regard, it is entirely unclear how providing an oval cylinder could be considered “a mere change in the size of a component” as asserted at page 5 of the Final Office Action. For example, merely changing the size of a cylinder having a circular cross-section would result in a larger or smaller cylinder having a circular cross-section. There does not appear to be any way that “a mere change in the size” of a circular cylinder could lead to an oval cylinder.

Appellants also traverse the assertion at page 2 of the Advisory Action that an oval-shaped waveguide would be obvious since, allegedly, “the changes in shape of the product are held to have been obvious for a person of ordinary skill in the art.” In support of this contention, the Examiner cites *In re Dailey*, 357 F.2d 669 (C.C.P.A. 1966) and *Glue Co. v. Upton*, 97 U.S. 3. As an initial matter, the Examiner is improperly attempting to apply *per se* rules of obviousness, rather than a proper, fact-specific inquiry under 35 U.S.C. § 103. *See In re Ochiai*, 71 F.3d 1565, 1571 (Fed. Cir. 1995) (“This method of analysis is founded on legal error because it substitutes supposed *per se* rules for the particularized inquiry required by section 103. It necessarily produces erroneous results.”). In particular, the Examiner is apparently attempting to apply supposed *per se* rules rather than properly establishing a *prima facie* in accordance with *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007). It is noted that the Examiner’s assertion of a “mere change in size of a component” at page 5 of the Final Office Action also appears to improperly rely on a supposed *per se* rule, and is thus also deficient for at least this additional reason.

Further, *In re Dailey* and *Glue Co. v. Upton* do not support the Examiner’s position. In this regard, the decision *In re Dailey* notes that there was no argument that the particular configuration at issue was significant. 357 F.2d at 672–673. Similarly, the decision in *Glue Co. v. Upton* notes that the mechanical division of a powdered glue does not change the composition and properties of the glue. 97 U.S. at 5–6. In the context of the present claims, however, the Specification recites at page 13, lines 6 to 9 that “[i]t should furthermore be emphasized that what primarily governs the high-frequency properties of feedthroughs 13 is not the thickness of base element 10 but rather their lateral dimensions

and their shape” (emphasis added), plainly indicating the significance and change in properties brought about by the lateral dimensions and shape of the feedthroughs. Thus, the Examiner’s reliance on *In re Dailey* and *Glue Co. v. Upton* is wholly misplaced. In this regard, the specific shapes and lateral dimensions as recited, for example, in independent claim 22 and dependent claims 28 and 29, and which are not disclosed by the combination of Geusic et al., Wen et al., and Tsang et al., would not be obvious under the Examiner’s supposed *per se* rules or otherwise.

In view of all of the foregoing, reversal of the present rejection is respectfully requested.

B. Rejection of Claims 32 and 33 to 36 Under 35 U.S.C. § 103(a)

Claims 32 and 33 to 36 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Geusic et al., Wen et al., Tsang et al., and Nakao et al. It is respectfully submitted that the present rejection should be reversed for at least the following reasons.

Claims 32 and 33 to 36 ultimately depend from claim 22. As more fully set forth above, the combination of Geusic et al., Wen et al., and Tsang et al. does not render unpatentable claim 22. Nakao et al. does not cure the critical deficiencies of the combination of Geusic et al., Wen et al., and Tsang et al. As such, it is respectfully submitted that the combination of Geusic et al., Wen et al., Tsang et al., and Nakao et al. does not render unpatentable any of claims 32 and 33 to 36, which ultimately depend from claim 22. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988) (any dependent claim that depends from a non-obvious independent claim is non-obvious).

In view of all of the foregoing, reversal of this rejection is respectfully requested.

C. Rejection of Claims 37 and 38 Under 35 U.S.C. § 103(a)

Claims 37 and 38 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Geusic et al., Wen et al., Tsang et al., Nakao et al., and Kanber. It is respectfully submitted that the present rejection should be reversed for at least the following reasons.

Claims 37 and 38 ultimately depend from claim 22. As more fully set forth above, the combination of Geusic et al., Wen et al., Tsang et al., and Nakao et al. does not render unpatentable claim 22. Kanber does not cure the critical deficiencies of the

combination of Geusic et al., Wen et al., Tsang et al., and Nakao et al. As such, it is respectfully submitted that the combination of Geusic et al., Wen et al., Tsang et al., and Nakao et al. does not render unpatentable either of claims 37 and 38, which ultimately depend from claim 22. *Id.*

In view of all of the foregoing, reversal of this rejection is respectfully requested.

D. Rejection of Claim 45 Under 35 U.S.C. § 103(a)

Claim 45 stands rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Geusic et al., Wen et al., Tsang et al., and Imai. It is respectfully submitted that the present rejection should be reversed for at least the following reasons.

Claim 45 depends from claim 22. As more fully set forth above, the combination of Geusic et al., Wen et al., and Tsang et al. does not render unpatentable claim 22. Imai does not cure the critical deficiencies of the combination of Geusic et al., Wen et al., and Tsang et al. As such, it is respectfully submitted that the combination of Geusic et al., Wen et al., Tsang et al., and Imai does not render unpatentable claim 45, which depends from claim 22. *Id.*

In view of all of the foregoing, reversal of this rejection is respectfully requested.

E. Rejection of Claims 29, 30, 40, and 41 Under 35 U.S.C. § 103(a)

Claims 29, 30, 40, and 41 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Geusic et al., Wen et al., Tsang et al., and Belousov et al. It is respectfully submitted that the present rejection should be reversed for at least the following reasons.

Claims 29, 30, 40, and 41 ultimately depend from claim 22. As more fully set forth above, the combination of Geusic et al., Wen et al., and Tsang et al. does not render unpatentable claim 22. Belousov et al. does not cure the critical deficiencies of the combination of Geusic et al., Wen et al., and Tsang et al. As such, it is respectfully submitted that the combination of Geusic et al., Wen et al., Tsang et al., and Belousov et al. does not render unpatentable any of claims 29, 30, 40, and 41, which ultimately depend from claim 22. *Id.*

In view of all of the foregoing, reversal of this rejection is respectfully requested.

8. CLAIMS APPENDIX

A “Claims Appendix” is attached hereto and appears on the four (4) pages numbered “Claims Appendix 1” to “Claims Appendix 4.”

9. EVIDENCE APPENDIX

No evidence has been submitted pursuant to 37 C.F.R. §§ 1.130, 1.131 or 1.132. No other evidence has been entered by the Examiner or relied upon by Appellants in the appeal. An “Evidence Appendix” is nevertheless attached hereto and appears on the one (1) page numbered “Evidence Appendix.”

10. RELATED PROCEEDINGS APPENDIX

As indicated above in Section 2, above, “[t]here are no other prior or pending appeals, interferences or judicial proceedings known by the undersigned, or believed by the undersigned to be known to Appellants or the assignee, ROBERT BOSCH GMBH, ‘which may be related to, directly affect or be directly affected by or have a bearing on the Board’s decision in the pending appeal.’” As such, there no “decisions rendered by a court or the Board in any proceeding identified pursuant to [37 C.F.R. § 41.37(c)(1)(ii)]” to be submitted. A “Related Proceedings Appendix” is nevertheless attached hereto and appears on the one (1) page numbered “Related Proceedings Appendix.”

11. CONCLUSION

For at least the reasons indicated above, Appellants respectfully submit that the art of record does not disclose or suggest the subject matter as recited in the claims of the above-identified application. Accordingly, it is respectfully submitted that the subject matter as set forth in the claims of the present application is patentable.

In view of all of the foregoing, reversal of all of the rejections set forth in the Final Office Action is therefore respectfully requested.

Respectfully submitted,

Dated: January 6, 2010

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CLAIMS APPENDIX

22. An electrical component, comprising:
 - a first conductive structure;
 - a second conductive structure;
 - at least one feedthrough including one of a right prism and a right oval cylinder;
 - a base element provided with at least one feedthrough that connects, continuously at least for high frequency electromagnetic waves, the first conductive structure, the first conductive structure extending on or in a vicinity of an upper side of the base element, to the second conductive structure, the second conductive structure extending on or in a vicinity of a lower side of the base element, wherein each one of the first conductive structure and the second conductive structure includes a planar waveguide.
23. The electrical component as recited in Claim 22, wherein the electrical component is one of a high frequency microelectronic component and a microelectromechanical component.
24. The electrical component as recited in Claim 22, wherein each one of the first conductive structure and the second conductive structure includes a coplanar waveguide.
25. The electrical component as recited in Claim 22, wherein the at least one feedthrough is one of filled and lined with an electrically conductive material corresponding to a metal.
26. The electrical component as recited in Claim 22, wherein:
 - the base element is flat at least in a vicinity of the at least one feedthrough, and
 - the at least one feedthrough extends perpendicularly to a plane spanned by the vicinity of the base element that is flat and penetrates through the base element.
27. The electrical component as recited in Claim 22, wherein the at least one feedthrough is etched into the base element using a plasma etching method and then one of filled and lined with an electrically conductive material.
28. The electrical component as recited in Claim 22, wherein the at least one feedthrough is one of square and rectangular in plan view.

29. The electrical component as recited in Claim 22, wherein at least one of:
the at least one feedthrough occupies in plan view an area of $400 \mu\text{m}^2$ to $40,000 \mu\text{m}^2$,
and
the at least one feedthrough has a diameter of $20 \mu\text{m}$ to $200 \mu\text{m}$.

30. The electrical component as recited in Claim 29, wherein:
the at least one feedthrough occupies in plan view an area of $1,600 \mu\text{m}^2$ to $10,000 \mu\text{m}^2$, and
the at least one feedthrough has a diameter of $40 \mu\text{m}$ to $100 \mu\text{m}$.

31. The electrical component as recited in Claim 22, wherein the base element has, in a region of the at least one feedthrough, a thickness of $100 \mu\text{m}$ to $650 \mu\text{m}$.

32. The electrical component as recited in Claim 22, wherein the base element includes a high resistance silicon disk having a specific electrical resistance of more than $1000 \Omega/\text{cm}$.

33. The electrical component as recited in Claim 22, further comprising:
a dielectric by which the first conductive structure and the second conductive structure are separated.

34. The electrical component as recited in Claim 22, wherein:
the dielectric includes a patterned dielectric layer.

35. The electrical component as recited in Claim 33, wherein:
the dielectric, the first conductive structure, the second conductive structure, and the at least one feedthrough form a capacitor having a capacitance of 0.05 pF to 4 pF .

36. The electrical component as recited in Claim 35, wherein:
the capacitance is 0.1 pF to 2 pF .

37. The electrical component as recited in Claim 33, wherein:
the dielectric includes a silicon oxide layer having a thickness of 45 nm to 1800 nm .

38. The electrical component as recited in Claim 37, wherein:

the dielectric includes a silicon oxide layer having a thickness of 90 nm to 900 nm.

39. The electrical component as recited in Claim 22, wherein:

the at least one feedthrough includes a first feedthrough, a second feedthrough, and a third feedthrough,

the first conductive structure includes an upper coplanar waveguide having:

 a first upper ground lead,

 an upper signal lead, and

 a second upper ground lead, the first upper ground lead, the upper signal lead, and the second upper ground lead extending at least locally parallel to one another, the second conductive structure includes a lower coplanar waveguide having:

 a first lower ground lead,

 a lower signal lead, and

 a second lower ground lead, the first lower ground lead, the lower signal lead, and the second lower ground lead extending at least locally parallel to one another,

 the first upper ground lead is connected to the first lower ground lead by way of the first feedthrough,

 the second upper ground lead is connected to the second lower ground lead by way of the second feedthrough,

 the upper signal lead is connected to the lower signal lead by way of the third feedthrough, and

 the third feedthrough is offset with respect to the first feedthrough and the second feedthrough.

40. The electrical component as recited in Claim 39, wherein in plan view, the offset of the third feedthrough on the base element is 50 μm to 300 μm .

41. The electrical component as recited in Claim 39, wherein in plan view, the offset of the third feedthrough on the base element is 150 μm .

42. The electrical component as recited in Claim 22, wherein one of the first conductive structure and the second conductive structure locally has a capacitative component, corresponding to an interdigital capacitor, for further HF compensation.

43. The electrical component as recited in Claim 22, further comprising:
one of an electrical component and a sensor element provided on an upper side of the base element and capable of being electrically activated by way of the at least one feedthrough from the lower side of the base element.

44. The electrical component as recited in Claim 43, wherein:
the at least one feedthrough includes at least two feedthroughs,
the one of the electrical component and the sensor element is capable of being activated by way of the at least two feedthroughs, and
the at least one of the electrical component and the sensor element includes a high frequency microelectronic or a microelectromechanical component such as a high frequency diode or a high frequency transistor, a micromechanically fabricated short circuit switch for high frequency electromagnetic waves, or a micromechanically fabricated sensor element.

45. The electrical component as recited in Claim 22, wherein the electrical component is provided, on the upper side of the base element, with a hermetically sealed capsule.

51. The electrical component as recited in Claim 22, wherein the electrical component is used to create low loss high frequency crossovers.

EVIDENCE APPENDIX

No evidence has been submitted pursuant to 37 C.F.R. §§1.130, 1.131, or 1.132. No other evidence has been entered by the Examiner or relied upon by Appellants in the appeal.

RELATED PROCEEDINGS APPENDIX

As indicated above in Section 2 of this Appeal Brief, “[t]here are no other prior or pending appeals, interferences or judicial proceedings known by the undersigned, or believed by the undersigned to be known to Appellants or the assignee, ROBERT BOSCH GMBH, ‘which may be related to, directly affect or be directly affected by or have a bearing on the Board’s decision in the pending appeal.’” As such, there no “decisions rendered by a court or the Board in any proceeding identified pursuant to [37 C.F.R. § 41.37(c)(1)(ii)]” to be submitted.